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14. ABSTRACT

Space Support Fully Integrated into All Phases of a Conflict: Ensuring Space Dominance for the Operational Commander. While Space Dominance has become a given for U.S. commanders in recent conflicts, emerging threats and the growth of complex space systems make the maintenance of that dominance a growing challenge. Numerous nations now have (or are developing) space capabilities and could challenge us in the next decade. In order to properly utilize and manage the various assets and threats facing our forces, operational commanders must be able to fully integrate space into all levels of their planning for a campaign. From Shaping Efforts, long before the fighting starts, through Enabling Civil Authorities, after the fighting ends, there are numerous capabilities which we must understand and master to win in the battle space of tomorrow.

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SPACE SUPPORT FULLY INTEGRATED INTO ALL PHASES OF A CONFLICT: ENSURING SPACE DOMINANCE FOR THE OPERATIONAL COMMANDER

By

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department on the Navy.

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Contents

Abstract

Space Support Fully Integrated into All Phases of a Conflict: Ensuring Space Dominance for the Operational Commander. While Space Dominance has become a given for U.S. commanders in recent conflicts, emerging threats and the growth of complex space systems make the maintenance of that dominance a growing challenge. Numerous nations now have (or are developing) space capabilities and could challenge us in the next decade. In order to properly utilize and manage the various assets and threats facing our forces, operational commanders must be able to fully integrate space into all levels of their planning for a campaign. From Shaping Efforts, long before the fighting starts, through Enabling Civil Authorities, after the fighting ends, there are numerous capabilities which we must understand and master to win in the battle space of tomorrow.

Introduction

October 6, 2016. The JTF Commander had reviewed the detailed Campaign Plan. As he watches the battle graphics unfold on the monitors he is glad that he had planned for full utilization of his space assets. All of his subordinate units are effectively communicating through SATCOM, they all have real-time space-based eyes on the battlefield, and his anti-satellite capabilities have effectively blinded the enemy. In addition, his human space elements stationed in a geosynchronous orbit over the battlespace ensure his space dominance…

Although the above scenario is set a few years in the future, the necessity to fully realize and utilize our nation's Space Based capabilities first became clearly apparent in Desert Shield / Desert Storm in 1991. Then Commander of Central Command Air Forces, GEN Charles A. Horner, testified before Congress on 22 April 1993: "Space is a realm in which many military operations are conducted more efficiently than by terrestrial systems. …our accomplishments in Desert Storm emphasize that space has unquestionably evolved as a military theater of operations."[1]

In addition to the current world space faring nations, a number of emerging nations are developing space delivery

systems and some could be in a position to threaten our space dominance as well as our space assets. While the operational commander in the U.S. has arguably the quickest ability to access space and (in most cases) the most current space intelligence available, this is by no means guaranteed in the future. As our space capabilities (and our adversaries' capabilities) expand, the role of space planning must be better understood and developed in order to keep up with those capabilities.

Our military's mastery of the full range of military operations (ROMO) continues to grow and it is essential to plan for Space Operations in each of the phases of conflict. Space assets must be synchronized and operators must have a common and clear understanding of capabilities and limitations. Since our space capabilities are applicable from Shaping Operations through Enabling Civil Authority, both the combatant commander and the civil leadership both need to understand those capabilities to ensure success. In addition, both military and civil agencies must understand what assets the other brings to the table. Civil assets sometimes are required to augment limited military assets and capabilities.

This paper will argue that space superiority impacts (more or less) each of the phases of conflict as outlined in JP 3-0:

0 - Shape

1 - Deter

2 - Seize the Initiative

3 - Dominate

4 - Stabilize

5 - Enable Civil Authority

A Campaign Planning approach that which recognizes the relationship between each of the space mission areas and Operational Functions is a good approach to allow the leadership to properly plan, and therefore ensure that space dominance is maintained throughout a conflict for the operational commander.

This paper addresses emerging threats, the Space Mission Areas and Operational functions, and the association of those missions and functions to each phase of the campaign. It demonstrates an approach that considers how all of those elements must be considered in each phase by matching those appropriate to the campaign planning process.

Analysis of Threats

A complex set of relationships, treaties, and mutual defense agreements exist between many nations throughout the world. One must consider not only the capabilities of one’s

adversaries, but of their friends and allies as well. While Russia is the most capable, and was once our only competitor in space, new entrants into the space threat arena include China, Japan, India, Pakistan, and now North Korea. Couple those emerging capabilities with known nuclear arsenals and the dominance of space becomes even more critical.

China's recent successful launches of manned spacecraft demonstrated their full membership into the space family. The government of China has laid out an ambitious plan for future missions in both earth orbit and on the surface of the moon. While their capabilities are certainly limited, their potential to challenge us is real. In addition, they could be developing ground-based threats to our space based reconnaissance efforts. The 13 October issue of Space News reported, "*China has beamed a ground-based laser at U.S. spy satellites over its territory… in an action that exposed the potential vulnerability of space systems that would provide crucial data to American troops and consumers around the world.*"[2]

Japan, a long time staunch ally of the U.S., has been quietly developing and launching satellites into orbit. In September of this year, Japan launched the latest "Information Gathering Satellite". Although mostly unnoticed by the news, this was, by all accounts a spy satellite. North Korea

reacted harshly in their government run news service and it is likely the launch was in reaction to North Korea's missile launches over Japanese territory.

India and Pakistan are two nuclear neighbors with a growing capability and desire for space access. India is by far the more advanced and has demonstrated a long-term and patient approach to the development of space technologies and ICBM capabilities. India conducted its first nuclear explosion in 1974 and since then has alternately been on the list of U.S. sanctioned nations and U.S. space cooperative nations. In 1980 India launched the country's first satellite and in 1999, after numerous successful launches, declared the development of an ICBM capability. While Pakistan is arguably far behind India, they have in the past cooperated with China to purchase missile technology. In September of 2001, both countries were sanctioned under U.S. law for the transfer of missile technology from China to Pakistan.[3]

North Korea is undoubtedly the greatest growing space threat on the horizon. With a short to medium range missile launch capability demonstrated last July, and a recent nuclear test, they have left very little doubt as to their direction. While intelligence sources agree that Korea could, at most possess large and (relatively) crude nuclear weapons, the path to mate their two capabilities is clear. The failure of their

attempted launch of long-range missiles in July may give us some time before we directly face the threat, but our North-East Asian allies are already within the reach of North Korea's capabilities.

In addition to nations with launch capabilities, we also face numerous challenges from commercial launched satellites and imagery available worldwide. While our forces count on superiority in timely imagery, positioning, and communications capabilities, the fact of the matter is that our adversaries no longer need to develop infrastructure necessary for space capabilities, they can purchase those capabilities – sometimes from our own allies.

Space Missions and Operational Functions

In order to understand the campaign planning requirements for effective Space Dominance, one must understand space missions and how those missions relate to the Operational Functions. U.S. Space Forces operate under four Mission Areas: Space Control, Space Force Enhancement, Space Support, and Space Force Application.[4] Figure 1 shows a general correlation between each of the space missions and the relative applicability to the Operational Functions. Although

not all of the Ops Functions related to a space mission apply in each campaign phase, all possibilities are shown.

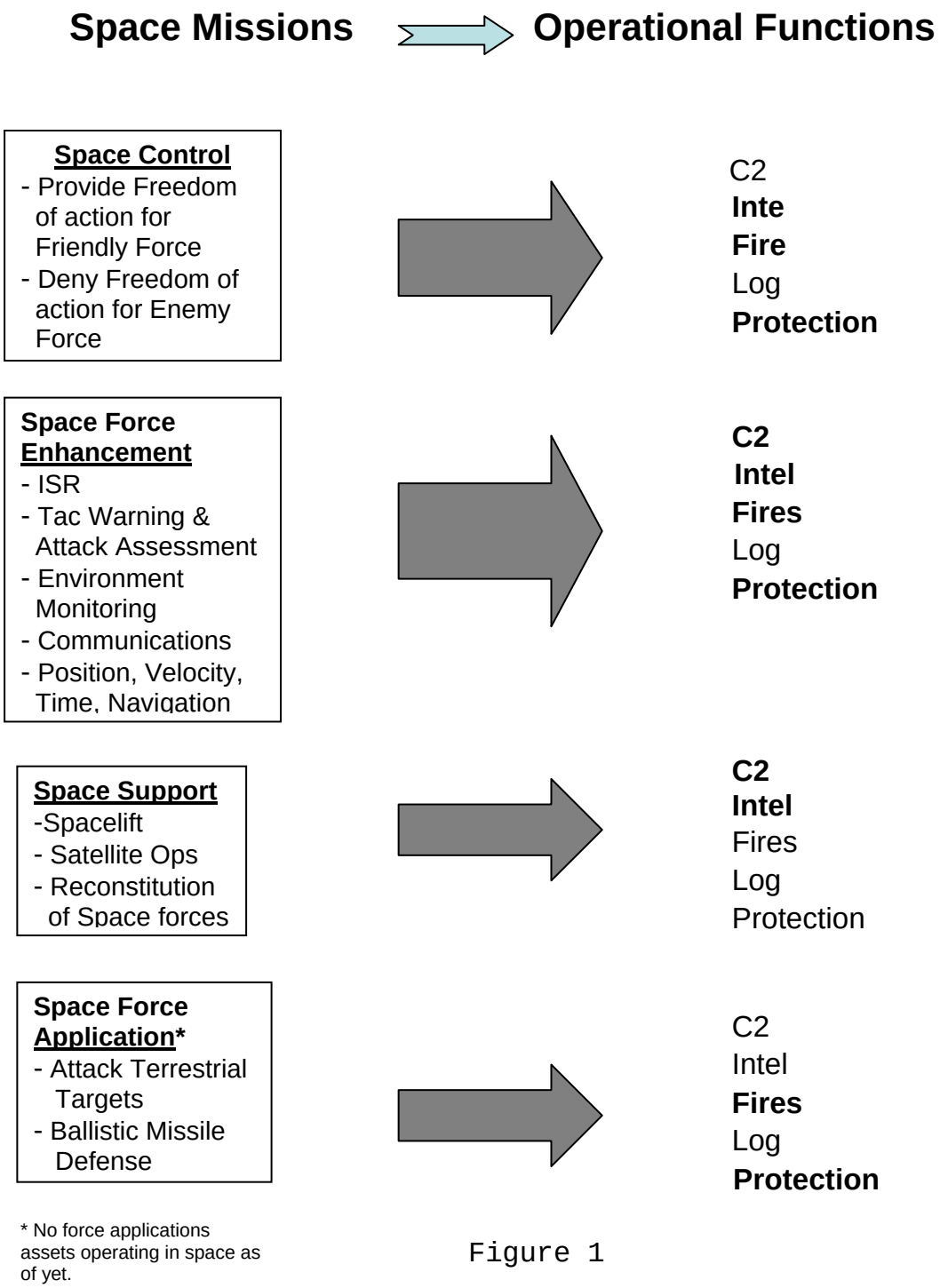


Figure 1

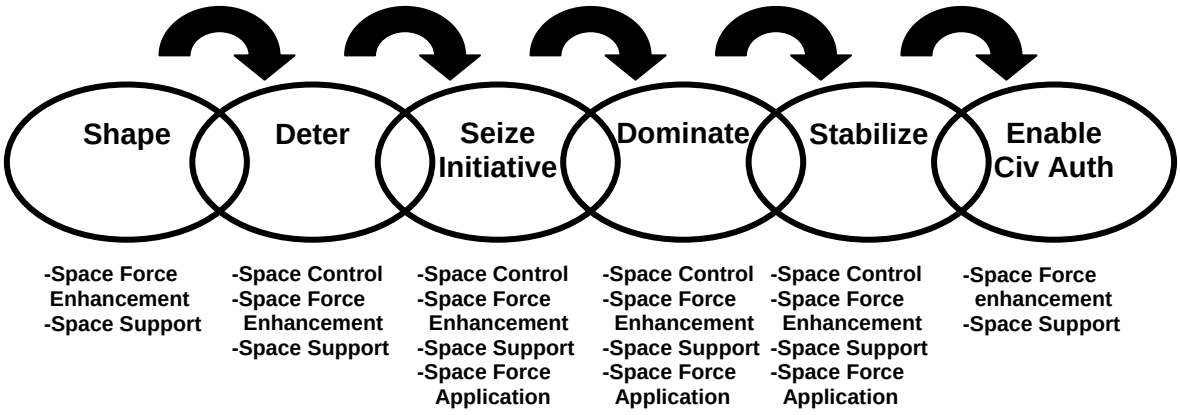
Space Control. JP 3-14 states "Space Control Operations provide freedom of action in space for friendly forces while, when directed, denying it to an adversary…"[5] These are activities, which can be conducted by each of the components. They include the surveillance of space, the protection (both active and passive) of space assets; and negation efforts which deceive, disrupt, deny, degrade, or destroy the enemy's space capabilities. These missions have the second greatest correlation to Operational Functions, after Space Force Enhancement.

Space Force Enhancement missions have the greatest correlation to Operational functions in campaign planning. According to JP 3-14, Space Force Enhancement will "…multiply joint force effectiveness by enhancing battlespace awareness and providing needed warfighter support."[6] These operations include Intelligence, Surveillance, Reconnaissance (ISR), Integrated Tactical Warning and Attack Assessment, Environmental Monitoring, Communications, and Position-velocity-time-navigation support. This is the broadest mission area and currently the most applicable to the Operational Commander. These operations tie in directly to the most Operational Functions when considering campaign planning.

The Space Support Mission area focuses on Spacelift Satellite Operations, and reconstitution. Spacelift is the launching and delivery of satellites into orbit and the augmentation of satellite capabilities in orbit. Satellite operations include maneuvering, configuring controlling and sustaining spacecraft and satellites in orbit. Reconstitution of space forces involves the replacement of space assets and satellites. This could include repositioning and reconfiguring satellites already in orbit to replace assets lost. While these action are pretty much invisible to the operational commander, success in these areas are critical to commander's ability to execute C2 and space based intelligence operations.

Space Force Application is the last, and least developed of the Space Mission Areas. This area would involve the attack of surface based targets by our weapons systems either operating in space or passing through space. This area includes ballistic missile defense as well as force projection. There are currently no assets in space capable of performing these operations, although launching of missiles from Earth (such as ICBMs), which traverse space, would fall under this area.[7]

Campaign Phases and Space Missions correlation



Space Control
- Provide Freedom of action for Friendly Force
- Deny Freedom of action for Enemy Force

Space Force Enhancement
- ISR
- Tac. Warning & Attack Assessment
- Environment Monitoring
- Communications
- Position, Velocity, Time, Navigation

Space Support
- Spacelift
- Satellite Ops
- Reconstitution of Space forces

Space Force Application*
- Attack Terrestrial Targets
- Ballistic Missile Defense

* No force applications assets operating in space as of yet.

Figure 2

Commanders and staff must carefully plan for space support throughout the complete range of military operations (ROMO). Figure 2 shows the relationship between each phase of an operation and the supporting Space Mission Area. The phases are overlapped to reflect the reality of ROMO where operations are rarely clear-cut by phase. When developing a Concept Plan (CONPLAN), including all of the elements of

power, and integrating space, could make the difference between succeeding in the Shape or Deter Phases, and sending troops into combat. Current planning guidance as outlined in JP 3-0, chapter V, specifically addresses space briefly only in Phase 0, 1, and 2.

Phase 0: Shaping Operations. Space missions: Space force enhancement and space support. Related Ops functions: Intelligence and Protection. Commanders must ensure that both U.S. and allies maintain space superiority through global and theater specific space operations. It is critical during shaping operations to maintain situational awareness of possible adversaries and protect your forces. Space provides critical resources for accomplishing this primarily through ISR, Tactical Warning, environment monitoring, communications, and space support operations.

It is important to remember that space assets are not limited to the military. The Department of State (DOS) or other U.S. government agencies may well lead shaping operations. These agencies and the military need to cooperate with assets held / controlled through non-DOD agencies as well as military controlled assets. The critical piece is that U.S. authorities must have accurate information and communication, worldwide, in order to shape the environment.

Phase 1: Deter. Space missions: Space Control, Space Force Enhancement and Space Support. Related Ops functions: C2, Intelligence and Protection. Commanders must make an assessment and develop an understanding of the adversary's intent and decision-making process early on in order to effectively deter him. The focus should consider setting the stage for seizing the initiative if deterrence fails.[8]

In addition to a continuation of the Space Force Enhancement and Space Support functions from the first phase, the commander will develop the Space Control mission. Space control is an integral part of our Command, Control, Communications, Computers, and Intelligence (C4I) framework. Limiting the adversary's use of space and precluding him from influencing friendly space systems is critical.

Space forces can also be utilized as a flexible deterrent. Theater Ballistic Missile Defense (TBMD) exercises demonstrate our capabilities to possible adversaries in areas where the U.S. or our allies are facing a TBMD threat. In addition, letting possible adversaries see our space based imagery capabilities (through the media or diplomatic channels) could interrupt and alter the decision making cycle of a possible opponent before he becomes an opponent. As the operation develops, the Space Control missions allow a transition from deterrence and diplomacy to active military

action. In addition, priorities of use for national space systems will shift to better support the operational commander.

Phase 2: Seize the Initiative. Space missions: Space Control, Space Force Enhancement, Space Support, and Space Force Application. Related Ops functions: C2, Intelligence Fires, and Protection. The commander must have space superiority early on in order to ensure freedom of action. He must have rapid and reliable access to remote sensing assets, navigation systems, communications, weather, and intelligence. Space allows the commander superior situational awareness so that he can say inside of his adversary's decision making cycle, causing him to react to our actions.

Space Force Applications is added in this phase and would give the commander kinetic options. Although no space based weapons are currently fielded, the commander would have the ability to disrupt or destroy enemy space capabilities or space interdiction assets. While there is an ongoing international debate on the possible Weaponization of space, the current U.S. National Space Policy states "The United States considers space capabilities – including the ground and space segments and supporting links – vital to its national interests. Consistent with this policy, the United States will: preserve its rights, capabilities, and freedom of action

in space; dissuade or deter others from either impeding those rights or developing capabilities intended to do so…"[9]

Phase 3: Dominate. Space missions: Space Control, Space Force Enhancement, Space Support, and Space Force Application. Related Ops functions: C2, Intelligence Fires, and Protection. Dominating is a continuation of the previous phase for space operations. The commander must maintain space control and ensure that the enemy does not interfere with or attack our capabilities. He must plan for adversarial actions consistent with known or suspected capabilities and be prepared to counter them.

Space assets should continue to be prioritized to the operational commander during this phase. Along those lines, the commander should also prioritize limited assets toward his main effort. During the planning for this phase, the space requirements must be specifically identified. There are too few assets with certain capabilities and in many cases there is significant lead time required to move space based assets in orbit to get eyes on target at a specific time and place.

Phase 4: Stabilize. Space missions: Space Control, Space Force Enhancement, Space Support, and Space Force Application. Related Ops functions: C2, Intelligence, fires, and Protection. Stabilize is a transition phase. Although likely to begin with continued combat operations, it will move

increasingly toward enabling the civil authorities. Space forces will continue the previous missions and should be planned for accordingly. Since stabilizing operations could turn back to combat, the space assets must be in place to continue space dominance.

National Security Presidential Directive 44 gives the U.S. State Department responsibility to plan and coordinate U.S. government efforts for stabilization and reconstruction.[10] As such, stabilization planning must include a detailed plan for sharing of space assets between agencies throughout the phase. Priority of military space assets may shift from the theater and so use of non-DOD assets can be of benefit. These assets, particular ISR assets, can assist in monitoring compliance and maintaining communications and control in what is often a confused and unorganized environment.

Phase 5: Enable Civil Authority. Space missions: Space Force Enhancement, and Space Support. Related Ops functions: Intelligence, and Protection. The Joint Military Operation in this phase is usually terminated at some point and the civilian authorities have now assumed the lead. The Military may still be in a supporting role with a greatly reduced footprint. Space assets at this point are predominantly in support of the civilian efforts while maintaining a protection posture and ensuring continued flow of information as

required. These assets should be planned for accordingly since they are well suited to support the operations without much visibility or attention. U.S. and allied non-military space forces should be considered for continued support as well.

In the Space Force Enhancement mission area, the space forces will be concentrated on communications and a reduced ISR capability. Environmental monitoring may be required because of the effects of the conflict, and can be used in support of the U.S. or Host Nation (HN) government. The Space Support mission area at this point will be focused on reconstitution of space forces as required as they return to preparation for support to Shaping Operations.

Conclusion

The proper use of space capabilities can be a big force multiplier only if properly planned. While it is normally considered in planning, it is often only as a subset of the JFACC responsibilities. Annex N (Space Operations) outlines detailed capabilities, which the commander can access throughout an operation. CJCS Manual 3122.03 (JOPES Vol II) directly addresses the various space missions available to the commander.[11] The bottom line is that space must be planned for as an integral part of the operating environment. Although

like air, land, and sea, it is affected by, and affects other environments, space is unique in its employment and capabilities. It is a given that U.S. and adversarial forces will continue to operate in space, and that this involvement will only increase in the future. As evidenced by the complex and overlapping nature of the space missions and the supported Operational Functions, U.S. planners must become comfortable with planning accordingly now. With a focus on the emerging threats, it is essential for space dominance and military success now and in the future.

Notes

[1] Joint Chiefs of Staff, Joint Doctrine for Space Operations, Joint Pub 3-14 (Washington, DC: 9 August 2002),I-2

[2] "China jamming test sparks U.S. satellite concerns" National Security Space Institute (13 October 2006).

[3] "U.S. Missile Nonproliferation Policy and India's Path to an IICBM Capability" Arms Control Today (Washington, DC March 2006) 17-18

[4] Joint Chiefs of Staff, Joint Doctrine for Space Operations, Joint Pub 3-14 (Washington, DC: 9 August 2002), IV-5.

[5] Joint Chiefs of Staff, Joint Doctrine for Space Operations, Joint Pub 3-14 (Washington, DC: 9 August 2002), IV-5.

[6] Joint Chiefs of Staff, Joint Doctrine for Space Operations, Joint Pub 3-14 (Washington, DC: 9 August 2002), IV-9.

[7] Joint Chiefs of Staff, Joint Doctrine for Space Operations, Joint Pub 3-14 (Washington, DC: 9 August 2002), IV-10.

[8] U.S. Joint Chiefs of Staff. Joint Operations. Joint Pub 3-0. (Washington, DC 17 September 2006) V-4.

[9] National Security Presidential Directive. U.S. National Space Policy. (Washington, DC 31 August 2006).

[10] U.S. Joint Chiefs of Staff. Joint Operations. Joint Pub 3-0. (Washington, DC 17 September 2006) V-23.

[11] Joint Chiefs of Staff, Joint Doctrine for Space Operations, Joint Pub 3-14 (Washington, DC: 9 August 2002), V-2.

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